6.5 Northern Conifer and Hardwood Swamps

Fraxinus nigra - Mixed Hardwoods-Conifers / Cornus sericea / Carex spp. Forest (Black Ash - Mixed Hardwood Swamp)

COMMON NAME	Black Ash - Mixed Hardwoods - Conifers / Red-osier Dogwood / Sedge species Forest
SYNONYM	Black Ash - Mixed Hardwood Swamp
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N)
FORMATION	Saturated cold-deciduous forest (I.B.2.N.g)
ALLIANCE	FRAXINUS NIGRA - ACER RUBRUM SATURATED FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

Voyageurs National Park

This community type occurs throughout the park in shallow depressions and low areas or adjacent to peatlands.

Globally

This black ash - hardwood swamp forest type is found widely in the northern Midwest region of the United States and into the boreal region of Central Canada. This association is found in Illinois, Michigan, Minnesota, western North Dakota, Wisconsin, Manitoba, and Ontario. It may be in Indiana, too.

ENVIRONMENTAL DESCRIPTION

Voyageurs National Park

The Black Ash-Mixed Hardwood Swamp occurs throughout the park in shallow depressions and low areas or adjacent to peatlands. In some cases, soils may be fairly deep peats reaching depths of >30 cm. More commonly, however, the soils of this type consist of 4-10 cm mineral soils (often with high organic matter content) or peat over dense clay. Under wetter conditions, the soils are typically peats, with hummock and hollow microtopography well developed. In these situations, standing water is usually present throughout the season in the hollows. Under relatively drier conditions (though still poorly drained), the soils are mineral soils and there is minimal microtopographic relief. Standing water is usually absent in these circumstances. Depending on topographic position and substrate, the water regime in these communities can be temporarily to seasonally flooded or saturated.

Globally

Stands occur on poorly drained wetland depressions on flat, gentle, or moderate slopes in valleys with impeded drainages or near lake shores. These wet pockets contain fine sandy clay loams, fine loams, mucks or soils with well-decomposed peat. Hydrology can vary from seasonally flooded to saturated. Conditions are often transitional to uplands (Sims *et al.* 1989, Minnesota NHP 1993, Cleland *et al.* 1994, Chambers *et al.* 1997).

MOST ABUNDANT SPECIES

Voyageurs National Park

Stratum	Species
Tree canopy	*Fraxinus nigra*
Tree sub-canopy	*Fraxinus nigra*
Tall shrub	*Alnus incana, Fraxinus nigra*
Short shrub	*Rubus pubescens*
Fern	*Equisetum sylvaticum, Dryopteris carthusiana, Athyrium angustum*
Graminoid	*Calamagrostis canadensis, Carex* spp.
Nonvascular	*Rhytidiadelphus triquetrus, Calliergon cordifolium, Mniaceae, Drepanocladus* spp.

Globally

Stratum	Species

Tree canopy	*Fraxinus nigra, Abies balsamea, Acer rubrum*
Tall shrub	*Alnus incana*

CHARACTERISTIC SPECIES
Voyageurs National Park
Fraxinus nigra, Alnus incana

Globally
Fraxinus nigra, Alnus incana

VEGETATION DESCRIPTION
Voyageurs National Park
The canopy and sub canopy (if present) of the Black Ash-Mixed Hardwood Swamp most commonly consists solely of *Fraxinus nigra*. In some situations, *Thuja occidentalis* may be mixed in these strata at low cover (< 25%). Canopy cover is typically 70-90% but may be as low as 40%. Canopy height is generally 10-20 meters. The subcanopy is either absent or present at low (20-30%) cover. In most stands, *Fraxinus nigra* saplings are present in the shrub strata around 20%. In wetter stands, *Alnus incana* shrubs may be present, typically around 20-30% cover. *Abies balsamea* and *Acer spicatum* can also occasionally be found in the shrub layers. The herbaceous layer is very diverse and usually reaches 80-100% cover. The most abundant species are *Calamagrostis canadensis, Equisetum sylvaticum, Rubus pubescens, Dryopteris carthusiana,* and *Athyrium angustum*. In addition to these, the following species are also common: *Iris versicolor, Carex lacustris, Carex intumescens, Carex gracillima, Platanthera psycodes, Mitella nuda,* and *Aster macrophyllus*. The nonvascular component of this community tends to be more prevalent in the wetter stands and consists of *Rhytidiadelphus triquetrus, Calliergon cordifolium, Mniaceae,* and *Drepanocladus* spp. In these wetter stands, bryophytes typically colonize the hollows, low hummocks and fallen logs at 20-40% cover.

Globally
Canopy structure is variable, ranging from 30 to 90% cover. The canopy is dominated by *Fraxinus nigra* (at least 50% cover), with a diverse mix of hardwoods and conifers in the main and sub canopies, including *Abies balsamea, Acer rubrum, Acer saccharum, Betula papyrifera, Betula alleghaniensis, Fraxinus pennsylvanica, Picea glauca, Populus balsamifera, Populus tremuloides, Thuja occidentalis, Tilia americana*, and *Ulmus americana*. Shrub and sapling species include *Abies balsamea, Acer spicatum, Alnus incana, Cornus sericea, Corylus cornuta, Lonicera canadensis, Prunus virginiana, Ribes triste, Rubus idaeus*, and *Rubus pubescens*. Herbaceous species include *Aralia nudicaulis, Aster macrophyllus, Athyrium felix-femina, Carex gracillima, Carex intumescens, Cinna latifolia, Circaea alpina, Clintonia borealis, Dryopteris carthusiana, Equisetum sylvaticum, Fragaria virginiana, Maianthemum canadense, Mitella nuda, Streptopus roseus, Thalictrum pubescens*, and *Trientalis borealis*. Mosses include *Climacium dendroides* and *Plagiomnium* spp. (Sims *et al.* 1989, Minnesota DNR 1993, Cleland *et al.* 1994, Harris *et al.* 1996, Chambers *et al.* 1997). A floodplain variant may also occur, with more hardwood dominance, with wetter species present, such as *Alnus incana, Calamagrostis canadensis*, and *Caltha palustris* (Harris *et al.* 1996). Diagnostic features include the dominance by *Fraxinus nigra*.

CONSERVATION RANK G4.

DATABASE CODE CEGL002105

COMMENTS
Voyageurs National Park
Diagnostic features of the type are canopy of *Fraxinus nigra*. Analogous to Ontario's W33 and W34 (Harris *et al.* 1996). As cedar becomes more common in the canopy and subcanopy, this type grades into the White Cedar-Black Ash Swamp. The Black Ash-Mixed Hardwood Swamp differs from the White Cedar-Black Ash Swamp in that it contains less than 25% cover of cedar in the canopy or subcanopy. Stands intermediate between these two types are common.

Many Black Ash-Mixed Hardwood Swamps occur in drainages and are therefore occasionally influenced by beaver activity. Since Black ash trees cannot survive prolonged periods of inundation, these communities are frequently flooded out by beaver activity.

REFERENCES

Chambers, B.A., B.J. Naylor, J. Nieppola, B. Merchant, P. Uhlig. Field Guide to Forest Ecosystems of Central Ontario. Southcentral Science Section (SCSS) Field Guide FG-01, Ontario Ministry of Natural Resources, North Bay, Ontario, Canada. 200 pp.

Cleland, D. T., J. B. Hart, G. E. Host, K. S. Pregitzer, and C. W. Ramm. 1994. Field guide to the ecological classification and inventory system of the Huron-Manistee National Forest. USDA Forest Service, North Central Forest Experiment Station.

Harris, A. G., S. C. McMurray, P. W. C. Uhlig, J. K. Jeglum, R. F. Foster, and G. D. Racey. 1996. Field guide to the wetland ecosystem classification for northwestern Ontario. Ont. Minist. Nat. Resour., Northwest Sci. Tech. Field Guide FG-01.Thunder Bay, Ont. 74 p.

Minnesota Natural Heritage Program. 1993. Minnesota's native vegetation: A key to natural communities. Ver. 1.5. Minn. Dep. Nat. Resour., Nat. Heritage Prog. St. Paul, Minn. 110 p.

Sims, R. A., W. D. Towill, K. A. Baldwin, and G. M. Wickware. 1989. Field guide to the forest ecosystem classification for northwestern Ontario. Ontario Ministry of Natural Resources.